

HABITAT IMPROVEMENT - LAKE ROOSEVELT

9001800

SHORT DESCRIPTION:

Facilitate passage of resident fish into Lake Roosevelt tributaries by removing man caused barriers and improve spawning and rearing habitat quantity and quality through barrier removal, instream habitat improvement, riparian vegetation enhancement and livestock exclosure.

SPONSOR/CONTRACTOR: CCT

Colville Confederated Tribes

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SUB-CONTRACTORS:

Spokane Tribe of Indians

GOALS

GENERAL:

Maintains biological diversity, Increases run sizes or populations, Provides needed habitat protection, Adaptive management (research or M&E)

WATERSHED:

Research, M&E

RESIDENT FISH:

Habitat, Production, Research, M&E

NPPC PROGRAM MEASURE:

10.8B.7

RELATION TO MEASURE:

This project is program measure 10.8B.7

TARGET STOCK

Adfluvial rainbow Trout

Adfluvial Rainbow Trout

LIFE STAGE

Adult

Juvenile

MGMT CODE (see below)

RSH & N

RSH & N

AFFECTED STOCK

Eagles, bear, otter, beaver, and deer

Fluvial Rainbow, other resident fish species such as sculpin sp., dace

BENEFIT OR DETRIMENT

Beneficial

Beneficial

BACKGROUND

STREAM AREA AFFECTED

Stream name:

Blue Cr., Iron Cr., Louie Cr., North Nanampkin Cr., and South Nanampkin Cr.

Subbasin:

Upper Columbia (Lake Roosevelt)

Stream miles affected:

20.9

Land ownership:

Tribal, Trust and Fee

Hydro project mitigated:

Chief Joseph and Grand Coulee Dams

Habitat types:

Riverine

HISTORY:

This project is identified as a resident fish substitution project in the blocked area as partial substitution for anadromous fish losses

due to the construction of Grand Coulee and Chief Joseph Dams. The target species for the project are adfluvial rainbow population that utilize tributaries to Lake Roosevelt. The adfluvial populations are assumed to be of indigenous summer steelhead origin, electrophoretic evaluations are currently being conducted for this stock. The adfluvial rainbow stock supports a limited yet important fishery for Colville Tribal fisherman. Current management strategies employ improved tributary habitat and passage, improved watershed/riparian habitat and harvest regulatory protection for these stocks when they are vulnerable during the spawning period. The project involves three phases (1) habitat/pass inventory of selected streams & development of habitat/passage implementation plan. (2) Implementation of instream structures, channel reconfiguration (increased sinuosity) riparian habitat planting and livestock exclosures and (3) Monitoring and evaluation. The project began phase 1 in 1990 phase 2 in 1993 and phase 3 in 1996. It is expected that the monitoring and evaluation phase will continue through 2000 and will provide information for future habitat/passage work within the blocked area.

BIOLOGICAL RESULTS ACHIEVED:

Measurable effects to adfluvial rainbow parr production has yet to be determined, as only one year of monitoring has occurred. In addition the adult return from the first brood year to utilize a portion of the improved and expanded habitat will not return until the spring of 1997. Spawning and rearing habitat quantity was increased approximately by approximately 11 miles through passage improvements alone.

PROJECT REPORTS AND PAPERS:

Monthly reports are received on the continuing progress of the project. Developed Scope of Work for 1996-1997 Budget.

ADAPTIVE MANAGEMENT IMPLICATIONS:

Valuable knowledge regarding proper installation of instream habitat components, increasing sinuosity and species selection/installation of riparian vegetation has been gained or will be identified during the project period. This information will be valuable to other habitat/passage projects in the future. Cooperation with adjacent land owners is necessary when implementing activities such as livestock exclosures. Land use activities within the watershed receiving the improvements should also be coordinated (i.e. watershed management plans) before or during the preliminary habitat/passage investigations.

PURPOSE AND METHODS

SPECIFIC MEASURABLE OBJECTIVES:

Phase III of this project is a post implementation / monitoring and evaluation action and will measure rainbow population trend (juvenile Production and adult escapement), effectiveness of the habitat/passage improvement implemented in terms of instream structure and channel reconfiguration durability and function over time, fish habitat utilization, fish habitat change over time (durability and function) and effectiveness of riparian habitat plantings (survival and function).

Specifically the overall project Objectives are:

- (1) Provide increased parr production consistent with habitat availability to help achieve a 12,000 fish harvest objective by the year 2000.
- (2) Manage adfluvial rainbow trout populations as self-sustaining naturally producing populations (escapement of 6000 adults into tributaries by the year 2000)
- (3) Provide information useful to other habitat/improvement projects through a comparative analysis of before and after habitat/passage improvement activities.
- (4) Identify future habitat/passage improvement opportunities in the blocked area above Grand Coulee Dam.

CRITICAL UNCERTAINTIES:

Watershed - land practices in the uplands change for the worse.

Major climatic changes occur (Long-term drought)

Catastrophic events (storm events) occur in the project area.

Reservoir rearing conditions become limiting.

BIOLOGICAL NEED:

This project was initiated in 1990 as partial mitigation for salmon losses above Grand Coulee Dam. Base-line studies indicated that spawning and rearing habitat was a major limiting factor to adfluvial rainbow trout production in tributaries to Lake Roosevelt. Specifically upstream migrations of adfluvial rainbow spawning populations were being adversely affected or

completely blocked by improperly installed culverts within the lower reaches of several tributaries, artificial stream channelization, poor riffle-pool ratios, and lack of instream cover were all adversely affecting adfluvial rainbow trout spawning and rearing potential. Poor sinuosity and permeable stream reaches strand rainbow parr in shallow pools during the late summer, fall and winter period, increasing mortality and delaying/blocking juvenile migrations from the tributaries.

HYPOTHESIS TO BE TESTED:

Improved instream fish habitat and riparian condition will improve spawning and rearing success of adfluvial rainbow trout in the project streams.

Improved passage conditions for adults will increase available spawning/rearing areas, increasing the production potential in the study streams.

Improved juvenile migration conditions (protracted summer flows/perennial flows) will increase juvenile migration survival from the study streams.

ALTERNATIVE APPROACHES:

None

JUSTIFICATION FOR PLANNING:

NA- This has been an on-the-ground project

METHODS:

Population trends- Juvenile population estimates will be conducted annually throughout the monitoring and evaluation period utilizing Seber-LeCren Two Pass Methodology.

Adult Escapement tend- Adult fish will be monitored annually in the study streams utilizing standard tributary weir trapping methodologies and design.

Juvenile Migration - Monitoring of juvenile migration from the study tributaries and the SanPoil River will be conducted annually utilizing fyke-nets with attached live boxes (tributary monitoring) and a rotary screw trap in the lower SanPoil River.

Adult Spawning Locations- Adult spawning locations will be conducted using standard ground surveys.

Fish Habitat Utilization- Habitat utilization will be monitored utilizing data from population estimates and Horizontal Control surveys.

In-Stream Habitat and Channel Morphology Function and Durability- Monitoring will occur annually and will utilize Horizontal Control Surveys and a picture library to record function and durability.

Riparian Vegetation Habitat Improvements- relative survival (by species) will be monitored annually in randomly selected 100 meter segments. The current function of these plantings will also be documented (eg. Providing stream bank stability, overhead/shade, etc.).

For more detailed information refer to the 1996-97 Statement-of-Work plan for this project.

PLANNED ACTIVITIES

SCHEDULE:

<u>Planning Phase</u>	<u>Start</u> 1990	<u>End</u> 1992	<u>Subcontractor</u> None
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Task Base-line investigations to identify potential project streams and their current stream morphology, fish habitat and fish population status.

<u>Implementation Phase</u>	<u>Start</u> 1993	<u>End</u> 1995	<u>Subcontractor</u> Fencing for livestock enclosures.
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Task Implementation of in-stream habitat structures, passage improvements, channel reconfiguration, riparian habitat plantings and livestock enclosures.

PROJECT COMPLETION DATE:

2001

CONSTRAINTS OR FACTORS THAT MAY CAUSE SCHEDULE OR BUDGET CHANGES:

None known.

OUTCOMES, MONITORING AND EVALUATION

SUMMARY OF EXPECTED OUTCOMES

Expected performance of target population or quality change in land area affected:

The selected tributaries streams of Phase III will provide perennial flows which will result in increased quality and quantity of adfluvial rainbow trout spawning and rearing habitat. The survival of natural and wild stocks will be greatly increased. In addition, a subsistence and recreational fishery will provide an economic benefit to all. Increase production of adfluvial rainbow trout out of selected streams and subsequent improvement to Lake Roosevelt.

Present utilization and conservation potential of target population or area:

What definition of utilization and conservation are we to use for B, C and D? The present utilization of this population is to support a minimal subsistence and recreational fishery for tribal and non-tribal fishermen.

Assumed historic status of utilization and conservation potential:

See B above. The historical utilization was subsistence, however this population was most likely anadromous (summer steelhead).

Long term expected utilization and conservation potential for target population or habitat:

See B above. The long-term utilization is subsistence and recreational fishery for tribal and non-tribal people.

Contribution toward long-term goal:

Adfluvial rainbow trout habitat/passage improvements will improve adult access to spawning habitat, increase spawning and rearing habitat quality and quantity, improve juvenile migration survival from the tributaries to the reservoir. All the aforementioned benefits will increase the riverine survival of the adfluvial rainbow populations and will contribute to self-sustaining wild population of fish that supports subsistence and recreational fisheries.

Indirect biological or environmental changes:

None known

Physical products:

Approximately 3 miles of fence (livestock enclosure).

Environmental attributes affected by the project:

Water temperatures will be cooler in the summer and early fall period (riparian habitat improvements, increase summer flow duration (increased sinuosity) and stream bank stabilization (riparian habitat improvements in-stream habitat improvements and livestock enclosures).

Changes assumed or expected for affected environmental attributes:

Near term attributes will include: riffle-pool ratios approaching 1:1, increased hiding cover for fish, increased nutrient potential (production) due to large organic debris installation, stable stream banks and deeper over summer and over winter rearing water (pools). Long term attributes will include: cooler summer water temperatures increased flow duration.

Assessment of effects on project outcomes of critical uncertainty:

Through the Monitoring and evaluation phase the project (current phase).

Information products:

Annual monitoring report and subsequent annual monitoring scope-of-work plan.

Coordination outcomes:

This project will coordinate with the Lake Roosevelt Fisheries Monitoring Program to continue the operations and maintenance of the pilot habitat/passage projects, plus improve habitat in additional streams if pilot projects are successful.

MONITORING APPROACH

- (1) project significantly improved adult fish and juvenile fish passage
- (2) Project improved over-all watershed environmental conditions.
- (3) Project improved fish rearing habitat
- (4) Project increased adult and juvenile survival while they occupied the riverine habitat.
- (5) Habitat improvements are low maintenance over-time.
- (6) methodologies are refined and utilized in other habitat projects throughout the basin.

Provisions to monitor population status or habitat quality:

The phase III monitoring program (current project phase).

Data analysis and evaluation:

Annual monitoring report (comparative analysis).

Critical uncertainties affecting project's outcomes:

Operate Lake Roosevelt as close to NPPC guidelines as the hydrological conditions will allow. Limiting factor in reservoir survival for adfluvial rainbow trout.

EVALUATION

Did the project achieve or significantly move toward the project's identified goals and objectives.

Incorporating new information regarding uncertainties:

Through the annual scope-of-work plan for the project.

Increasing public awareness of F&W activities:

A public relations (PR) task should be developed for this project to highlight the work to date. Currently the project has no specific PR objectives, however information has been presented in arenas such as the Lake Roosevelt forum.

RELATIONSHIPS

RELATED BPA PROJECT

RELATIONSHIP

Actively monitors adult adfluvial rainbow populations in the SanPoil River tributaries.

Actively monitors fish migrations in the SanPoil river (migration corridor/rearing habitat for adfluvial rainbow trout.

Monitors the rainbow catch in Lake Roosevelt as well as in the lower SanPoil River.

OPPORTUNITIES FOR COOPERATION:

Currently cooperation exists between the aforementioned related projects through data sharing and sub-contracting. Project #'s currently utilize man-power from these projects to complete their scope of work, particularly during the spring and fall field seasons. Limited equipment sharing exists, primarily adult and juvenile fish trapping equipment.

COSTS AND FTE

1997 Planned: \$198,848

FUTURE FUNDING NEEDS:

<u>FY</u>	<u>\$ NEED</u>	<u>% PLAN</u>	<u>% IMPLEMENT</u>	<u>% O AND M</u>
1998	\$216,000			
100 Monitoring all years				
1999	\$224,673			
2000	\$236,000			
2001	\$0			
2002	\$0			

PAST OBLIGATIONS (incl. 1997 if done):

<u>FY</u>	<u>OBLIGATED</u>
1990	\$115,150
1991	\$127,792
1992	\$298,972
1993	\$199,080
1994	\$178,562
1995	\$221,000
1996	\$200,000

TOTAL: \$1,340,556

Note: Data are past obligations, or amounts committed by year, not amounts billed. Does not include data for related projects.

LONGER TERM COSTS:

Costs may incur beyond 2002 if the pilot projects are successful and a decision is made to continue this type of work, the cost is unknown at this time. Maintenance costs be incur beyond 2002 for periodic maintenance of some of the instream structures and fence lines, the frequency and amount are unknown at this time.

Hopefully the current monitoring and evaluation will identify projected long-term maintenance cost and frequency as well as projected continuation of this type of habitat work.

1997 OVERHEAD PERCENT:

The percentage indirect cost varies from year to year depending upon the negotiations between the Tribe and Federal Solicitors Office. Rates have varied in the past from 28% to almost 50%. Currently the indirect cost rate is 48.8%.

HOW DOES PERCENTAGE APPLY TO DIRECT COSTS:

48.8% is charged to only the salary amount of the project.

CONTRACTOR FTE: 3

SUBCONTRACTOR FTE: 1